

## WHAT IS CLAIMED IS:

1. A solid composition comprising:
  - a) a carrier which has a least one of the following physical properties:
    - elasticity module in the range of 5-100 N/cm,
    - density of 1-10 mg/cm<sup>3</sup>,
    - a chamber diameter of more than 0.75 mm and less than 4 mm, and
    - a chamber diameter average below 3 mm;
  - b) solid fibrinogen; and
  - c) solid thrombin;wherein said solid fibrinogen and said solid thrombin are evenly distributed and fixed upon said carrier.
2. A composition according to claim 1 wherein the carrier is a biodegradable polymer selected from the group consisting of polyhyaluronic acid, polyhydroxy acid, lactic acid, glucolic acid, hydroxybutanoic acid, a cellulose, gelatine and collagen.
3. A carrier according to claim 2 wherein the carrier is a collagen sponge which comprises collagen type I material from mammalian, transgenic or recombinant sources.
4. A composition according to claim 1 wherein the carrier has one or more active sides, fibrinogen is present in an amount of 2-10 mg/cm<sup>2</sup>, and thrombin is present in an amount of 1.5-5.5 IU/cm<sup>2</sup>.
5. A composition according to claim 1 wherein the fibrinogen is human, purified from a natural source, or transgenic or recombinant human fibrinogen.
6. A composition according to claim 1 wherein the fibrinogen is purified from a natural source.
7. A composition according to claim 1 wherein the fibrinogen is transgenic or

recombinant.

8. A composition according to claim 1 wherein the thrombin is human, purified from a natural source, or transgenic or recombinant human thrombin.

9. A composition according to claim 1 wherein the thrombin is purified from a natural source.

10. A composition according to claim 1 wherein the thrombin is transgenic or recombinant.

11. A composition according to claim 1 for surgical interventions in the gastrointestinal system, on parenchymal organs, cardiovascular surgery, thoracic surgery, surgical interventions in the ear, nose and throat (ENT) area, dental, gynecological, urological, vascular, bone, and emergency surgery, neurological surgery, lymphatic, biliary, and cerebrospinal (CSF) fistulae, and air leakages during thoracic and pulmonal surgery.

12. A composition according to claim 11 for surgical interventions in the esophagus, stomach, small intestine, large intestine and rectum.

13. A composition according to claim 11 for surgical intervention on the liver, spleen, pancreas, kidneys, lungs, adrenal glands, thyroid and lymph nodes.

14. A composition according to claim 11 for surgical intervention on the trachea, bronchi and lungs.

15. A composition according to claim 11 for spongiosa resection.

16. A composition for hemostasis, tissue sealing and tissue gluing comprising:  
a flexible carrier which has at least one of the following physical properties:  
elasticity module in the range of 5-100 N/cm,

density of 1-10 mg/cm<sup>3</sup>,  
a chamber diameter of more than 0.75 mm and less than 4 mm, and  
a chamber diameter average below 3 mm;  
solid fibrinogen on said flexible carrier; and  
solid thrombin on said flexible carrier;  
wherein said composition does not comprise aprotinin.

17. A composition according to claim 16, wherein said composition does not comprise any antifibronolytic agent.

18. A composition according to claim 16, wherein said composition does not comprise  $\epsilon$ -aminocaproic acid or  $\alpha$ 2-antiplasmin.

19. A composition according to claim 16, wherein the solid fibrinogen and solid thrombin are fixed to the carrier in a manner so that:

abrasion of said composition is less than 1.0 mg/cm<sup>2</sup> when a sample of said composition is shaken on a Vibrofix shaker at a frequency of about 1000 rpm for 2 minutes; and

if said composition is inserted into endoscopic equipment and thereafter removed, said composition is substantially unchanged and has a cast of coating material less than 20% as an indication of the flexibility of the carrier and the solid adhesion of the solid fibrinogen and solid thrombin.

20. A composition according to claim 16, wherein said composition is substantially air tight and liquid tight and has an elasticity factor of at least 1.25 as determined by a test comprising fixation of said composition to a Latex sheet, expansion of the Latex by pressure three times and at the third time measuring the area of the carrier at the highest point of Latex sheet expansion and comparing the expanded area of the carrier with the starting area of the carrier.

21. A composition according to claim 16 wherein the carrier is a biodegradable

polymer selected from the group consisting of a polyhyaluronic acid, polyhydroxy acid, lactic acid, glucolic acid, hydroxybutanoic acid, a cellulose, gelatine and collagen.

22. A composition according to claim 16 wherein the carrier has one or more active sides, fibrinogen is present in an amount of 2-10 mg/cm<sup>2</sup>, and thrombin is present in an amount of 1.5-2.5 IU/cm<sup>2</sup>.

23. A composition according to claim 16 wherein the fibrinogen is human, purified from a natural source, or transgenic or recombinant human fibrinogen.

24. A composition according to claim 16 wherein the fibrinogen is purified from a natural source.

25. A composition according to claim 16 wherein the fibrinogen is transgenic or recombinant.

26. A composition according to claim 16 wherein the thrombin is human, purified from a natural source, or transgenic or recombinant human thrombin.

27. A composition according to claim 16 wherein the thrombin is purified from a natural source.

28. A composition according to claim 16 wherein the thrombin is transgenic or recombinant.

29. A composition according to claim 16 for surgical interventions in the gastrointestinal system, on parenchymal organs, cardiovascular surgery, thoracic surgery, surgical interventions in the ear, nose and throat (ENT) area, dental, gynecological, urological, vascular, bone, and emergency surgery, neurological surgery, lymphatic, biliary, and cerebrospinal (CSF) fistulae, and air leakages during thoracic and pulmonal surgery.

30. A composition according to claim 29 for surgical interventions in the esophagus, stomach, small intestine, large intestine and rectum.

31. A composition according to claim 29 for surgical intervention on the liver, spleen, pancreas, kidneys, lungs, adrenal glands, thyroid and lymph nodes.

32. A composition according to claim 29 for surgical intervention on the trachea, bronchi and lungs.

33. A composition according to claim 29 for spongiosa resection.

34. A method for tissue sealing, comprising:  
applying on a wound surface a carrier having at least one of the following physical properties:  
an elasticity module in the range of 5-100 N/cm,  
a density of 1-10 mg/cm<sup>3</sup>,  
a chamber diameter of more than 0.75 mm and less than 4 mm, and  
a chamber diameter average below 3 mm,  
and wherein the carrier has a sufficient amount of fibrinogen and a sufficient amount of thrombin for tissue sealing coated on the carrier.

35. A method for obtaining hemostasis comprising:  
applying on an area of blood leakage a carrier having at least one of the following physical properties:  
an elasticity module in the range of 5-100 N/cm,  
a density of 1-10 mg/cm<sup>3</sup>,  
chamber diameter of more than 0.75 mm and less than 4 mm, and  
a chamber diameter average below 3 mm,  
wherein a sufficient amount of fibrinogen and a sufficient amount of thrombin for hemostasis is coated on the carrier.

36. A method for tissue gluing comprising:  
applying on a wound surface a carrier having at least one of the following physical properties:

- an elasticity module in the range of 5-100 N/cm,
- a density of 1-10 mg/cm<sup>3</sup>,
- a chamber diameter of more than 0.75 mm and less than 4 mm, and
- a chamber diameter average below 3 mm

wherein a sufficient amount of fibrinogen and a sufficient amount of thrombin are coated on the carrier.